Table 4. Seasonal prevalence, mean abundance, and mean intensity of trematode *Mesocoelium monas* infection in *Bufo marinus* in Bermuda.

	BBSR								
	1995	1996	1997	Flatts	Devonshire Marsh	Paget Marsh	Cameron	Sea Swept	Lukes Pond
March 1995 (n = 31)									
Prevalence (%)*	54 (14/26)				40 (2/5)				
Mean Abundance (±SD)	76.1 ± 167.9				15.0 ± 20.0				
Mean intensity	123.6				37.5				
(range)	(2–754)				(25–50)				
May 1997 (n = 33)									
Prevalence (%)*			90 (9/10)	67 (4/6)	67 (4/6)	40 (2/5)		67 (4/6)	
Mean Abundance (±SD)			78.9 ± 95.9	64.7 ± 110.7	37.7 ± 27.0	38.6 ± 70.0		36.8 ± 67.2	
Mean intensity			87.7	97.0	56.5	96.5		55.3	
(range)			(1–320)	(8–309)	(52–66)	(15–178)		(1–186)	
July–August 1995–1996 (n = 69)									
Prevalence (%)*	45 (5/11)	95 (19/20)		92 (12/13)	70 (7/10)	60 (6/10)	0/2	0/3	
Mean Abundance (±SD)	8.6 ± 16.0	75.2 ± 142.1		263.3 ± 516.9	2.6 ± 2.9	240.6 ± 353.0			
Mean intensity	19.0	79.1		285.2	8.7	401.0			
(range)	(1–55)	(1–648)		(18–2,000)	(1–10)	(6–1,000)			
November 1995 (n = 34)									
Prevalence (%)*	63 (5/8)			100 (4/4)	33 (1/3)	100 (2/2)		0/10	57 (4/7)
Mean Abundance (±SD)	23.1 ± 25.6			88.5 ± 72.8	3.3 ± 4.7	205.0 ± 195.0			151.0 ± 347.0
Mean intensity	37.0			88.5	10.0	205.0			264.2
(range)	(10–75)			(4–200)		(10–400)			(3–1,000)

* Numbers in parentheses are no. toads infected/no. toads examined.

vember) were compared with those of the summer sample of Williams (1959) ($\chi^2 = 12.03$, 1 df, $P < 0.001$) and the August sample of Goldberg et al. (1995) ($\chi^2 = 113.29$, 1 df, $P < 0.001$), the differences were highly significant. The reason for the significant differences among these 3 reports is unknown. Lees (1962) found both prevalence and intensity of infection by *R. bufonis* and *Aplectana acuminata* of *Rana temporaria* from England to be lowest in summer. Baker (1979) found a similar relationship for *R. ranae* in *Rana sylvatica* from Ontario; prevalence and intensity of infection were lowest in summer and highest in spring and early fall. Because species of the genus *Aplectana* are monoxenous, this difference may simply reflect the patchiness of infective larvae.

Goldberg et al. (1995) reported 1 of 45 (2%) *B. marinus* captured on the grounds of the BBSR in August 1992 to be infected by *M. monas*. In this study, toads from the same site, 14 of 26 (56%) in March, 9 of 10 (90%) in May, 24 of 31 (77%) in July–August, and 5 of 8 (63%) in November, had a significantly greater infection rate ($\chi^2 = 46.33$, 1 df, $P < 0.001$). Additional seasonal collections will be necessary at this and other sites to determine whether this variation is a normal perturbation in the prevalence of this trematode or whether the high rate of infection will be maintained.

The metacercariae of 2 trematodes (*Clinostomum* sp.) were found in the small intestine of 1 male *B. marinus* and represent new records of parasitism. The genital pores are posterior in position, the ovaries and testes form a group, and the anterior ends are retractable. Ova were not present; thus, we believe the specimens to be immature or in an unsuitable host. Species of *Clinostomum* are known to encyst in frog tissues (Schell, 1985).

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Research Note

Helminths of the Lizard *Anolis cristatellus* (Polychrotidae) from the British Virgin Islands, West Indies

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ABSTRACT: Sixty-two *Anolis cristatellus* from 7 islands of the British Virgin Islands were examined for helminths. One species of trematode, *Mesocoelium monas*, 1 species of cestode, *Oochoristica maccoyi*, 6 species of nematodes, *Parapharyngodon cubensis*, *Spauligodon anolis*, *Trichospirura teixeirai*, *Physaloptera* sp. (larva), *Porrocaecum* sp. (larvae), and *Rhabdias* sp., and 2 species of acanthocephalans, *Centrorhynchus* sp. (cystacanths) and unidentified oligacanthorhynchid cystacanths, were found. *Anolis cristatellus* represents a new host record for *O. maccoyi*, *T. teixeirai*, *Physaloptera* sp., *Porrocaecum* sp., and oligacanthorhynchid cystacanths.

KEY WORDS: *Anolis cristatellus*, Polychrotidae, helminths, British Virgin Islands.

Anolis cristatellus Duméril and Bibron, 1837, occurs in Puerto Rico and its offshore islands and the U.S. and British Virgin Islands and has been introduced into the eastern Dominican Republic and southeast Florida (Schwartz and Henderson, 1991). The only reports of helminths have been from populations of *A. cristatellus* from Puerto Rico (Chitwood, 1934; Cofresí-Sala, 1964; García-Díaz, 1966; Bain and Chaniotis, 1975; Acholonu, 1976). The purpose of this note is to report helminths of *A. cristatellus* from the British Virgin Islands.

Sixty-two *A. cristatellus* from the British Virgin Islands were borrowed from the Texas Memorial Museum, University of Texas–Austin (TNHC) and examined for helminths: accession nos. TNHC 55696–55707, 55762–55781, 55808–55809, 55814–55824, and 55831–55847. Lizards were collected by hand-held noose in 1993 and 1995, preserved in 10% formalin, and stored in ethanol. They were from 7 islands: Anegada Island (N = 6, mean ± SD snout–vent length [SVL] = 55.8 ± 8.6 mm, range = 47–68 mm), Beef Island (N = 8, SVL = 63.9 ± 4.6 mm, range = 56–68 mm), Guana Island (N = 3, SVL = 58.0 ± 3.6 mm, range = 55–62 mm), Necker Island (N = 12, SVL = 66.3 ± 2.5 mm, range = 61–70 mm), Norman Island (N = 12, SVL = 59.9 ± 4.6 mm, range = 51–68 mm), Tortola Island (N = 11, SVL = 60.8 ± 2.0 mm, range = 57–64 mm), Virgin Gorda Island (N = 10, SVL = 54.2 ± 3.8 mm, range = 49–61 mm). There are significant differences among SVLs for these populations (Kruskal–Wallis test = 30.5, 6 df, $P < 0.001$).

The body of each anole was opened by a longitudinal incision from vent to throat, and the digestive tract was removed by cutting across the anterior esophagus and rectum. The esophagus, stomach, and small and large intestines were slit longitudinally and examined under a dissecting microscope. The gallbladder, liver, and body cavity were also searched for helminths. Each helminth was initially placed in a drop of glycerol on a glass slide. Nematodes were identified from these temporary mounts. Trematodes, cestodes, and acanthocephalans were stained with hematoxylin and mounted in balsam for identification. Selected encysted nematode larvae and acanthocephalan cystacanths were embedded in paraffin, and histological sections were cut at 8 μm and stained with hematoxylin and eosin. Terminology follows that of Bush et al. (1997).

The helminth fauna of *A. cristatellus* from the British Virgin Islands consisted of 1 species of trematode, *Mesocoelium monas* (Rudolphi, 1819), 1 species of cestode, *Oochoristica maccoyi* Bursey and Goldberg, 1996, 6 species of nematodes, 4 of which were represented by mature individuals, *Parapharyngodon cubensis* (Baruš and Coy Otero, 1969), *Spauligodon anolis* (Chitwood, 1934), *Trichospirura teixeirai* (Baruš and Coy Otero, 1968), and *Rhabdias* sp., 2 of which were represented by larvae, *Physa-*

Table 1. Island of occurrence, number, prevalence, mean intensity, range, and mean abundance of helminths in 62 *Anolis cristatellus* from the British Virgin Islands.

Island Helminth	No. lizards	No. helminths	Prevalence (%)	Mean Intensity $\bar{x} \pm SD$	Mean Intensity Range	Mean Abundance ($\bar{x} \pm SD$)
Anegada	6					
Parapharyngodon cubensis		8	67	2.0 ± 1.4	1–4	1.3 ± 1.5
Porrocaecum sp. (larvae)		4	33	2.0 ± 1.4	1–3	0.7 ± 1.2
Centrorhynchus sp. (cystacanths)		20	17	20.0		3.3 ± 8.2
Beef	8					
Parapharyngodon cubensis		16	50	4.0 ± 2.2	2–7	2.0 ± 2.5
Spauligodon anolis		99	38	33.0 ± 32.1	12–70	12.4 ± 24.2
Trichospirura teixeirai		5	25	2.5 ± 2.1	1–4	0.6 ± 1.4
Porrocaecum sp. (larvae)		4	25	2.0		0.5 ± 0.9
Centrorhynchus sp. (cystacanths)		3	13	3.0		0.4 ± 1.1
Oligacanthorhynchidae (cystacanths)		8	38	2.7 ± 1.2	2–4	1.0 ± 1.5
Guana	3					
Parapharyngodon cubensis		8	67	4.0 ± 2.8	2–6	2.7 ± 3.1
Porrocaecum sp. (larvae)		8	67	4.0 ± 4.2	1–7	2.7 ± 3.8
Centrorhynchus sp. (cystacanths)		3	67	1.5 ± 0.7	1–2	1.0 ± 1.0
Necker	12					
Parapharyngodon cubensis		24	83	2.4 ± 2.2	1–8	2.0 ± 2.2
Trichospirura teixeirai		1	8	1.0		0.8 ± 0.3
Physaloptera sp. (larva)		1	8	1.0		0.8 ± 0.3
Porrocaecum sp. (larvae)		77	83	7.7 ± 8.0	2–28	6.4 ± 7.8
Centrorhynchus sp. (cystacanths)		8	25	2.7 ± 1.2	2–4	0.7 ± 1.3
Oligacanthorhynchidae (cystacanth)		1	8	1.0		0.1 ± 0.3
Norman	12					
Parapharyngodon cubensis		8	58	1.1 ± 0.4	1–2	0.7 ± 0.6
Porrocaecum sp. (larva)		1	8	1.0		0.1 ± 0.3
Centrorhynchus sp. (cystacanths)		60	75	6.6 ± 3.4	2–11	5.0 ± 4.2
Tortola	11					
Oochoristica maccoyi		1	9	1.0		0.1 ± 0.3
Parapharyngodon cubensis		20	55	3.3 ± 2.5	1–7	1.8 ± 2.5
Trichospirura teixeirai		8	27	2.7 ± 2.9	1–6	0.7 ± 1.8
Porrocaecum sp. (larvae)		13	27	4.3 ± 2.9	1–6	1.2 ± 2.4
Rhabdias sp.		2	18	1.0		0.2 ± 0.4
Centrorhynchus sp. (cystacanths)		27	36	6.8 ± 6.9	2–17	2.5 ± 5.1
Oligacanthorhynchidae (cystacanths)		2	18	1.0		0.2 ± 0.4
Virgin Gorda	10					
Mesocoelium monas		72	60	12.0 ± 6.3	5–23	7.2 ± 7.8
Parapharyngodon cubensis		18	80	2.3 ± 1.3	1–4	1.8 ± 1.5
Trichospirura teixeirai		4	10	4.0		0.4 ± 1.3
Porrocaecum sp. (larvae)		137	90	15.2 ± 25.0	1–77	13.7 ± 24.1
Centrorhynchus sp. (cystacanth)		1	10	1.0		0.1 ± 0.3
Oligacanthorhynchidae (cystacanths)		25	60	4.2 ± 5.1	1–14	2.5 ± 4.4

loptera sp. and *Porrocaecum* sp., and 2 species of acanthocephalans represented by cystacanths, *Centrorhynchus* sp. and an unidentified oligacanthorhynchid acanthocephalan. The specimens of *Rhabdias* sp. had damaged anterior regions and could not be identified to species. *Anolis cristatellus* represents a new host record for *O. maccoyi, T. teixeirai, Physaloptera* sp., *Porrocaecum* sp., and the oligacanthorhynchid cystacanths.

Representative helminths were placed in vials of alcohol and deposited in the U.S. National Parasite Collection (USNPC) Beltsville, Maryland: *Mesocoelium monas* 87534; *Parapharyngodon cubensis* 87535; *Spauligodon anolis* 87536; *Trichospirura teixeirai* 87537; *Physaloptera* sp.